

**REMARKS/ARGUMENTS**

Claims 1-22 are pending in the present application. Claims 1, 5, 9, 10, 11, 13, and 18 are amended. Claims 20-22 are new. Claims 1, 5, and 9 are independent claims.

The amendments to claims 10 and 11 were made to correct typographical errors regarding the dependencies of these claims. As such, claims 10 and 11 are now dependent on claims 9 and 10, respectively.

In view of the amendments and the following remarks, the Examiner is respectfully requested to reconsider the outstanding rejections.

**Drawing Objections**

In the Office Action, the Examiner indicated that the drawing corrections filed on May 26, 2004 accommodated the drawing corrections raised in the Office Action of March 25, 2004. However, the Examiner issued a new objection to the drawings. Specifically, the Examiner indicated that the box 112 indicating the internal performance monitor 300 of RX<sub>N</sub> should be moved to the upper left corner of RX<sub>N</sub>.

Filed concurrently herewith is a drawing correction in which the box 112 has been moved as requested by the Examiner.

Thus, Applicants respectfully request that the Examiner withdraw this objection.

Furthermore, Applicants respectfully submit that this is the third consecutive Office Action (see Paper Nos. 7, 10, and 12) in which Fig. 2 has been objected to **for different reasons**. In view of the expense of preparing and filing corrected drawings, Applicants respectfully point out that the drawings need only meet the standard of facilitating "the understanding of the subject matter sought to be patented" See 37 CFR § 1.81(a). Accordingly, it is respectfully submitted that the Examiner should not make any additional objections to the drawings for minor informalities that would not affect one's understanding of the claimed invention.

#### Claim Objections

The Examiner objected to claim 1 and 4 because of minor informalities. Applicant respectfully submits that claims 1 and 4 have been amended based on the Examiner's suggestions. Accordingly, withdrawal of these objections is respectfully requested.

#### Rejection Under 35 U.S.C. § 103

Claims 1, 2, and 12-14 Rejected Under Waschka

Claims 1, 2, and 12-14 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 4,449,247 to Waschka, Jr. (hereinafter Waschka). This rejection is respectfully traversed.

Independent claim 1 recites cascading **more than two** optical channels. In the Response to Arguments of the outstanding Office Action, the Examiner addresses Applicants' arguments with regard to independent claim 1 by citing the middle paragraph of page 14 in Applicants' Reply of May 26, 2004. In this cited paragraph, Applicants argued, "[a]ssuming for the sake of argument that the Examiner's interpretation is proper, ... this interpretation at most suggests cascading two optical communication channels."

The Examiner responds to this argument by asserting that the link between each pair of stations in Fig. 1 of Waschka constitutes a channel. Thus, Applicants must assume that the Examiner interprets the link between a terminal station and repeater station in Fig. 1 as being a cascaded optical channel. Also, it must be presumed that the Examiner interprets the link between repeater stations as being a cascaded optical channel.

It is respectfully submitted that the Examiner's interpretation is improper, because the repeater station of Waschka cannot be properly interpreted as an optical receiver for a cascaded optical channel, according to claim 1.

Specifically, claim 1 recites that the optical receiver for an optical channel  $i$  has an **electrical output** connected to the input of the optical transmitter of the subsequent optical channel  $i+1$ , to form the cascade. The repeater stations in Fig. 1 of Waschka only use **optical** links to transmit the BER test sequence. Although Waschka discloses orderwire links for each station, these links are used for supervisory messages -- not for BER test sequences. See, e.g., col. 4, lines 23-26 and col. 19, lines 25-29). Since none of the repeater stations in Fig. 1 of Waschka can be interpreted as a receiver for a cascaded optical channel, none of the links 17a terminating at a repeater station can be interpreted as a cascaded optical channel.

Accordingly, Waschka cannot reasonably be interpreted as teaching more than two cascaded optical communication channels, as required by independent claim 1. It is respectfully submitted that claim 1 is allowable at least for this reason. Further, Applicants submit that claims 2 and 12-14 are allowable at least by virtue of their dependency on claim 1. Accordingly, the Examiner is respectfully requested to reconsider and withdraw this rejection.

Claims 1, 2, and 12-14 Rejected Under Sato/Waschka

Claims 1, 2, and 12-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,229,631 to Sato et

al. (hereinafter Sato) in view of Waschka. This rejection is respectfully traversed.

In the Reply of May 26, 2004, Applicants argued, "Sato fails to disclose cascading more than two optical communication channel...[Sato] at most illustrates only two channels being cascaded.

In the Office Action, the Examiner responds to this argument with the assertion that "each link between each transmitter/receiver 110, repeater 120, other successive repeaters, and the terminal transmitter/receiver...in Fig. 12 of Sato et al. constitutes a "channel." See Office Action at page 22.

However, the Examiner again fails to recognize that claim 1 requires that the **electrical output** of the receiver for each optical communication channel  $i$  be connected to the input of the transmitter for the next optical communication channel  $i+1$ . Sato discloses that the output links 100a, 100b of each receiver is an **optical fiber** (see, e.g., col. 9, lines 12-18; col. 10, lines 15-19). None of these optical fibers 100a, 100b can be interpreted as an "electrical output... connected to an input of an optical transmitter." Thus, none of the repeaters 120 in Fig. 12 can be interpreted as a receiver for a cascaded optical communication channel.

Therefore, it is respectfully submitted that Sato's individual links 100a and 100b between a transmitter/receiver 110 and a repeater 120 **cannot** constitute a cascaded optical channel, as recited in claim 1. Thus, Sato at most discloses two cascaded optical channels.

Also, for reasons discussed above, Waschka fails to remedy this deficiency in Sato because Waschka fails to disclose cascading more than two optical channels.

For the reasons set forth above, Applicant respectfully submits that claim 1 is allowable over Sato and Waschka, either taken alone or in combination with one another. Applicant further submits that claims 2 and 12-14 are allowable at least by virtue of its dependency on claim 1. The Examiner is, thus, respectfully requested to reconsider and withdraw this rejection.

Claims 3-11 and 15-19

Claims 3-11 and 15-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Waschka in view of U.S. Patent No. 5,764,651 to Bullock et al. (hereinafter Bullock). These claims also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato in view of Waschka, and further in view of Bullock. These rejections are respectfully traversed.

With respect to claims 3 and 4, Applicants respectfully submit that Bullock fails to remedy the deficiencies of both Waschka and the combination of Waschka/Bullock set forth above in connection with independent claim 1. Thus, Applicants submit that claims 3 and 4 are allowable at least by virtue of their dependency on claim 1.

As amended, independent claims 5 and 9 each recite a "plurality of optical communication channels arranged in a continuous cascade of a plurality of **co-located** optical transmitter/receiver pairs."

As will be evident upon review of the original specification (see, e.g., page 7, line 18 - page 10, line 18; and Fig. 2), the present invention includes an exemplary embodiment in which each of the optical transmitters  $TX_N$  and receivers  $RX_N$  for the cascaded optical channels are located in optical network elements 110 and 112, at the same testing site. As shown in Fig. 2, a diagnostic analyzer may also be located at this site. Thus, bit error rate (BER) testing is performed on the optical transmitters and receivers of a wavelength division multiplexed (WDM) optical communication system before deployment. Performing the BER testing of these optical transmitters and receivers at the same location allows for quick troubleshooting and repair after the faulty equipment has been identified.

It is respectfully submitted that Waschka fails to disclose that the tested optical transmitters and receivers are co-located. Instead, Waschka discloses **post-deployment** testing of terminal stations in an optical network. Accordingly, Waschka requires supervisory/command messages to be sent via orderwire connections between the various stations in order to coordinate testing at these stations. See, e.g., col. 2, lines 3-50.

Similarly, the network in Fig. 12 of Sato also represents a deployed system. Sato discloses that a workstation 130 is implemented in the optical system of Fig. 12 to perform supervisory control of the various devices of the UPWARD and DOWNWARD lines while the system is in operation. See, e.g., col. 10, lines 21-43. Thus, it is submitted that Sato fails to teach or suggest testing the BER of a plurality of co-located optical transmitters and receivers.

Furthermore, it is respectfully submitted that Bullock neither teaches nor suggests testing a BER for a plurality of co-located optical transmitters and receivers. As shown in Fig. 3, Bullock is concerned with a deployed optical system (having different multiplexer sites). See, e.g., col. 2, lines 32-56.

Thus, it is respectfully submitted that the cited prior art fails to teach or suggest each claimed feature in independent claims 5 and 9. At least for this reason, Applicants submit that



independent claims 5 and 9 are allowable over both the Waschka/Bullock combination and the Sato/Waschka/Bullock combination. Thus, the Examiner is respectfully requested to reconsider and withdraw these rejections.

### **Conclusion**

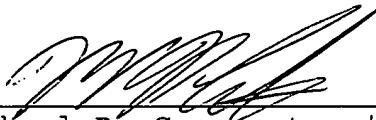
In view of the above amendments remarks, the Examiner is respectfully requested to reconsider the outstanding claim rejections and issue a Notice of Allowance in connection with the pending claims.

Should the Examiner believe that any outstanding matters remain in the present application, the Examiner is strongly encouraged to contact Jason W. Rhodes (Reg. No. 47,305) at the telephone number of the undersigned in order to conduct an interview in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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ANNOTATED SHEET

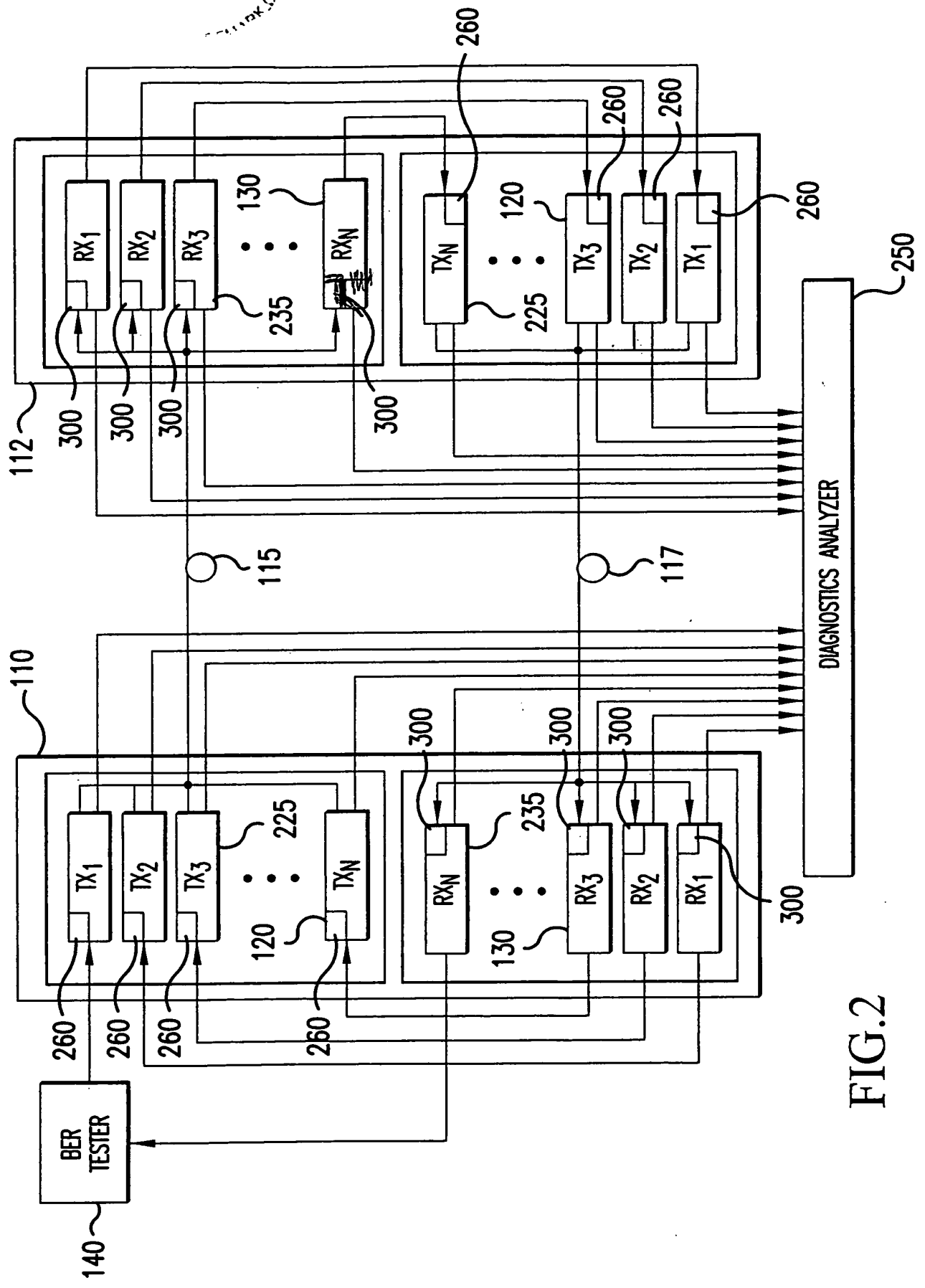


FIG. 2